# UNITED STATES PATENT AND TRADEMARK OFFICE **CERTIFICATE OF CORRECTION**

PATENT NO.

: 7,079,523 B2

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**DATED** 

**APPLICATION NO. : 09/775305** : July 18, 2006

INVENTOR(S)

: G. Rodney Nelson, Jr.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Title Page, showing an illustrative figure, should be deleted and substitute therefor the attached title page.

Delete drawing sheets 1-9 and substitute therefor the drawing sheets, consisting of figs. 1-9 as shown on the attached page.

Signed and Sealed this

Fifth Day of June, 2007

JON W. DUDAS Director of the United States Patent and Trademark Office

# (12) United States Patent

Nelson, Jr. et al.

(10) Patent No.:

TP

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# (45) Date of Patent:

Jul. 18, 2006

# (54) MAINTENANCE LINK USING ACTIVE/STANDBY REQUEST CHANNELS

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 813 days.

(21) Appl. No.: 09/775,305

(22) Filed: Feb. 1, 2001

(65) Prior Publication Data
US 2002/0080024 A1 Jun. 27, 2002

### Related U.S. Application Data

- (60) Provisional application No. 60/180,598, filed on Feb. 7, 2000.
- (51) Int. Cl. 1104B 7/216 (2006.01) G08C 17/00 (2006.01)

(56) References Cited

## U.S. PATENT DOCUMENTS

(Continued)

4,577,316	A	3/1986	Schiff		*************	370/104
4,675,863		6/1987	Paneth et	al.	**********	370/50
4,817,089	A	3/1989	Paneth et	ai,	**************	370/95

FOREIGN PATENT DOCUMENTS

0 773 636 AI 5/1997

#### (Continued)

## OTHER PUBLICATIONS

Heine, Gunnar, "The Air-Interface of GSM," in GSM Networks: Protocols, Terminology, and Implementation, (MA: Artech House, Inc.), pp. 89-100 (1999).

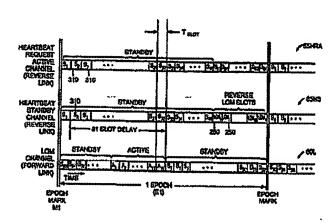
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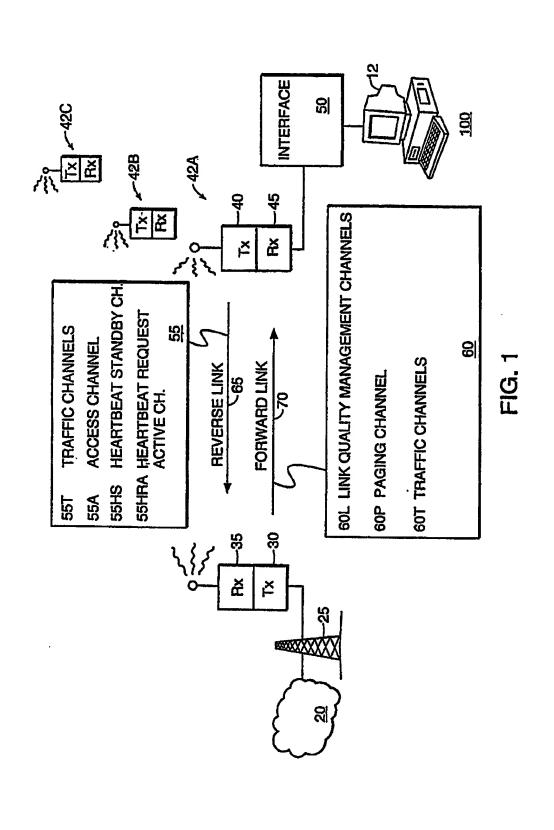
Primary Examiner—Huy D. Vu
Assistant Examiner—Daniel Ryman
(74) Attorney, Agent, or Firm—Hamilton, Brook, Smith & Reynolds, P.C.

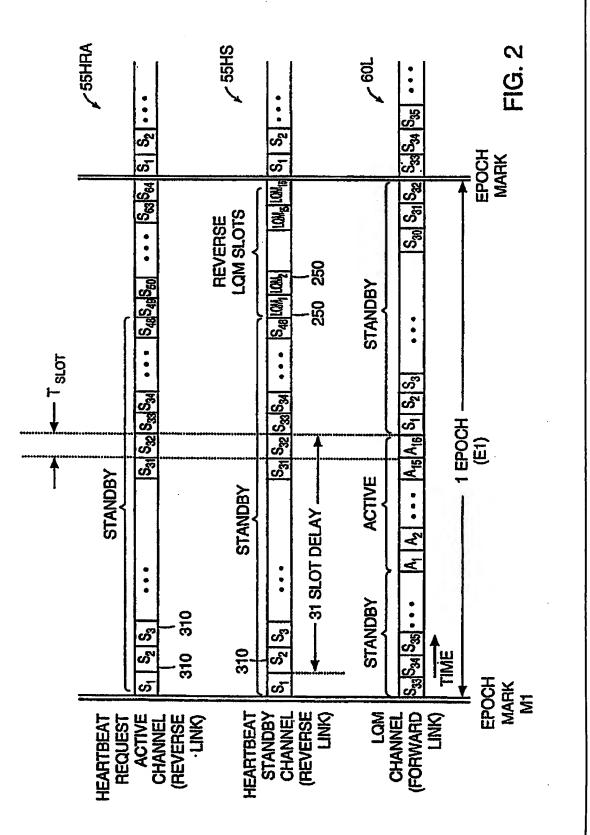
#### (57) ABSTRACT

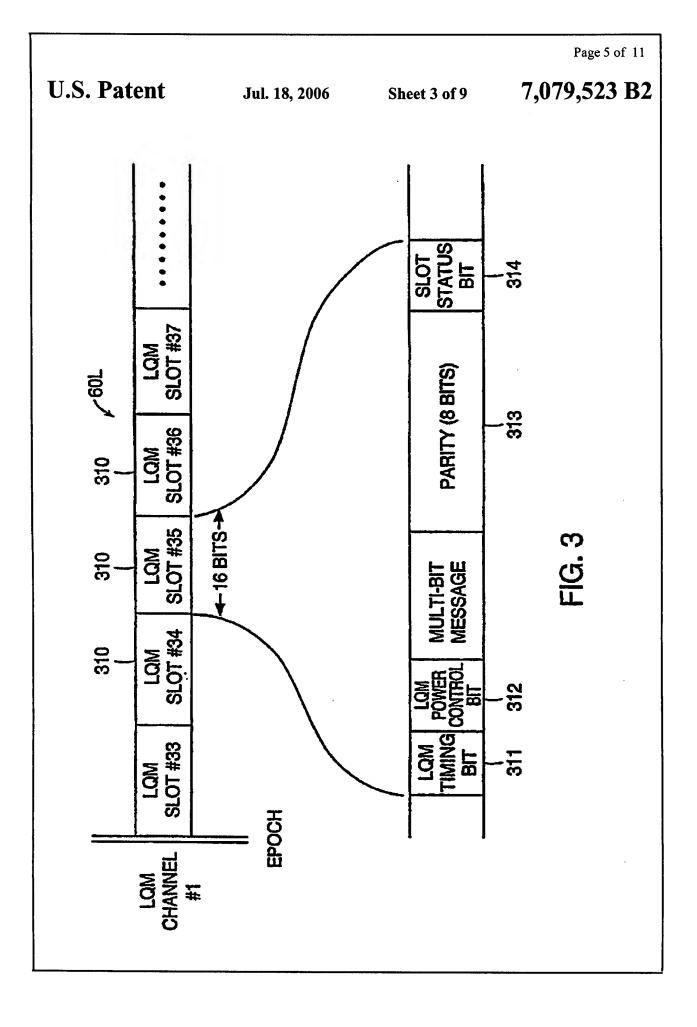
Multiple field units in a CDMA system are synchronized for communication with a base station using shared forward and reverse link channels. In an illustrative embodiment, each field unit is assigned a time slot in a forward link channel to receive messages from the base station. Likewise, each field unit is assigned a time slot on a common reverse link channel for transmitting messages to the base station. Timing alignment and power level control among each of many field units and the base station is achieved by analyzing messages received at the base station in a corresponding time slot as transmitted by each field unit. Thereafter, a message is transmitted from the base station in a corresponding time slot to a particular field unit for adjusting its timing or power level so that future messages transmitted from the field unit are received in the appropriate time slot at the base station at a desired power level. In this way, minimal resources are deployed to maintain communication and precise synchronization between a base station and each of multiple users, minimizing collisions between field units transmitting in adjacent time slots on the reverse link. This method reduces the frequency a field unit must rely on the use of a slotted alcha random access channel according to IS-95.

10 Claims, 9 Drawing Sheets





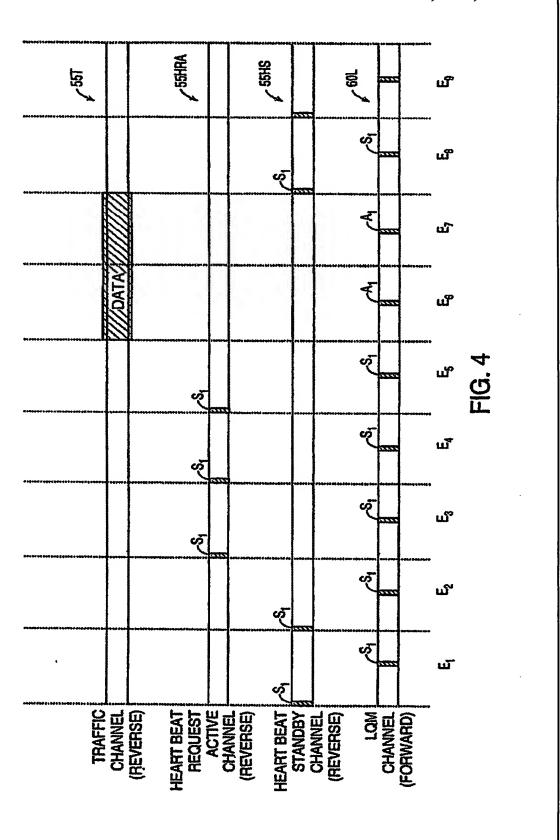




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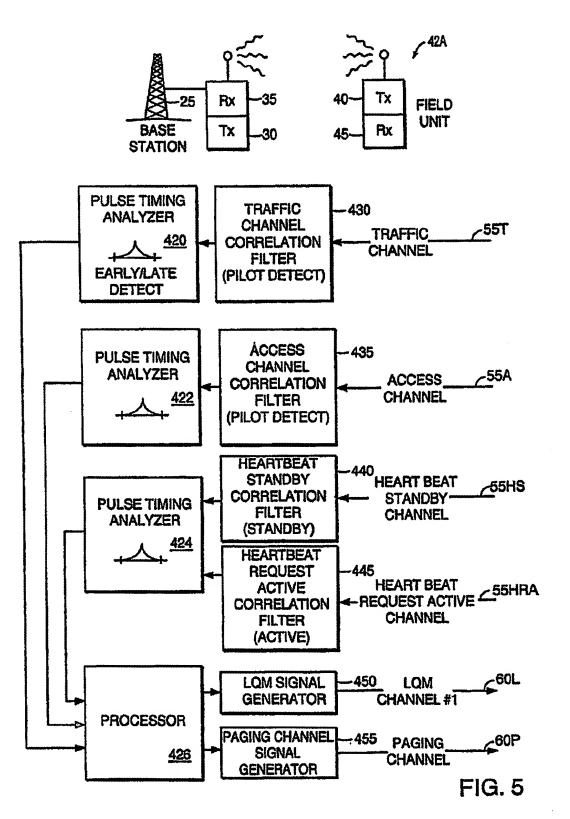
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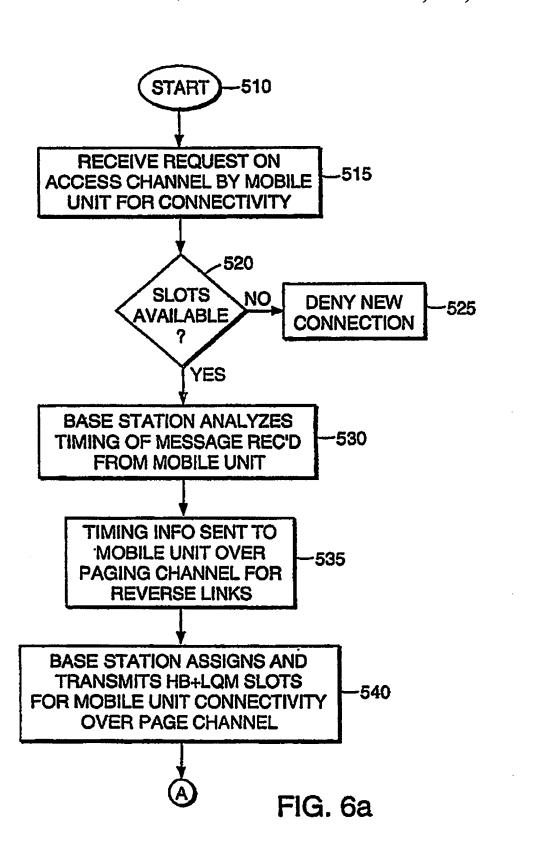


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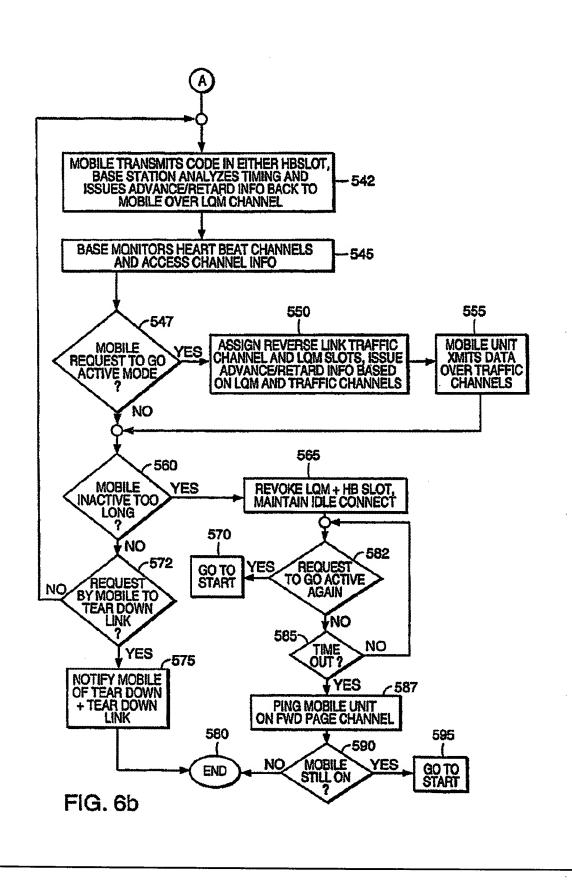




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	ASSIGNMNET OF TRAFFIC CHANNELS FOR DATA TRANSMISSIONS	YES	ON	QN		
	TIMING REFERENCE IN REVERSE LINK	PILOT SYMBOL SEQUENCE IN TRAFFIC CHANNEL	UNIQUE CODE OF HEARTBEAT STANDBY CHANNEL. OR UNIQUE CODE OF HEARTBEAT REQUEST ACTIVE CH.	NONE	FIG. 8	
	SYCHRONIZATION CHANNELS	LQM + TRAFFIC	LQM + HEARTBEAT OR LQM + HEARTBEAT - REQUEST	NONE	Ē	
	SUBSCRIBER MODE	ACTIVE	STANDBY	IDLE		

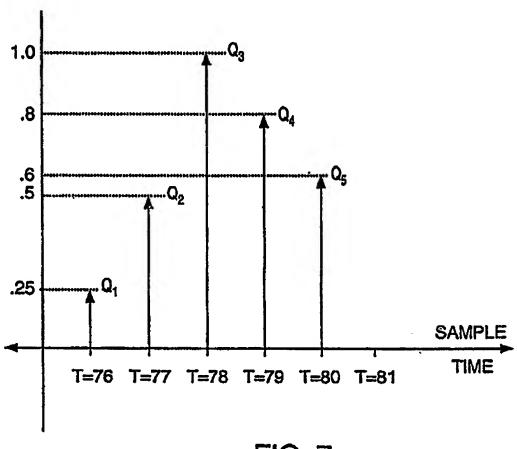


FIG. 7